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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/524,253	02/10/2005	Takaaki Kishigami	MAT-8658US	4635
23122	7590	03/05/2007		
RATNERPRESTIA P O BOX 980 VALLEY FORGE, PA 19482-0980			EXAMINER CHEN, SHELLEY	
			ART UNIT	PAPER NUMBER
			3662	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		03/05/2007	PAPER	

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/524,253

Applicant(s)

KISHIGAMI ET AL.

Examiner

Shelley Chen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 16 January 2007.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,7-11,13,16,17,20 and 21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 1, 21 is/are rejected.
- 7) ☐ Claim(s) 7-11,13,16,17,20 and 21 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 January 2007 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>10 Feb. 2007</u>  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Drawings***

1. Replacement drawings were received on 16 January 2007. However, these drawings are not acceptable. The drawings are objected to under 37 CFR 184 (p) because the text labels are not clear and legible.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 21 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
4. Regarding claim 21, the terms "unitary converting unit" and "unitary conversion processing" render the claim indefinite because the meaning of these terms is unclear. The terms are not defined anywhere in the claims or specification. Based upon Application No. 10/565,845 by Kishigami et al., the examiner will assume that "unitary conversion" means multiplication by a matrix or scalar value in order to convert from one unit of measurement to another. As best understood by the examiner, claim 21 will be treated on the merits in this office action.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. **Claim 1 rejected** under 35 U.S.C. 103(a) as being unpatentable over **Matsuoka et al.** (U.S. Patent Application Publication # 2002/0085653).

**Regarding claim 1**, Matsuoka discloses an adaptive antenna radio communication device comprising:

-an array antenna made up of a plurality of antenna elements receiving high frequency signals that are transmitted by multi-carrier (figure 5:101; abstract; paragraphs 15, 38)

-a demultiplexer for demultiplexing the signal received by said respective antenna elements to a plurality of sub-carrier signals (figure 5:105, paragraphs 18, 38)

-Nd divided band direction estimating units for estimating the direction-of-arrival of a radio wave by dividing the entire communication band into Nd bands and using sub-carrier signals belonging to the respective divided bands (figure 5:112, paragraphs 18, 39)

-a divided band array weight creating unit for creating a weight of a receive array having a directional beam in the direction of estimation by said divided band direction estimating unit for said respective divided bands (figure 5:112 and 106-108, paragraphs 18, 21, 39)

-a subcarrier directivity creating unit for creating for creating a directivity by multiplication-combining the receive array weight created in each divided band with the corresponding sub-carrier signal belonging to the divided band (figure 5:106-108, paragraphs 18, 40-41, 47)

-a demodulating unit for demodulating data (figure 5:102, paragraph 38)

Matsuoka's invention differs from the instant invention in that Matsuoka's demodulating unit is not placed at the output of said sub-carrier directivity creating unit; it is placed at the output of the receiving antenna. However, the demodulating unit can be placed anywhere after the receiving antennas without changing the operation of the rest of the circuit, because the demodulating step is independent from the other steps (it only extracts the data communicated, which has no effect on the operation of the

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adaptive antenna device). The remaining components of the adaptive antenna device can be designed to operate on the received signal in either the modulated or demodulated forms.

It would have been obvious to move Matsuoka's demodulator to the output of the sub-carrier directivity creating unit, so that the remaining components operate on the received signals in the modulated form. Because the placement of the demodulator has no other effect on the operation of the adaptive antenna device, placement at the output of the sub-carrier directivity creating unit would be an obvious design choice.

***Allowable Subject Matter***

8. **Claims 7-11, 13, 16-17, and 20** objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. **Claim 21** objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims and rewritten to overcome the 112 second paragraph rejection above.

**Claims 7-11, 13, 16-17, and 20-21** are allowable subject matter because none of the prior art discloses an adaptive antenna radio communication device wherein said

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divided band direction estimating unit further has a path search unit for calculating a delay profile by calculating a cross-correlation between respective input sub-carrier signals using a known pilot signal embedded in the sub-carrier signal and detecting a plurality of path arrival timings from the delay profile.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following references are cited as disclosing limitations of the applicant's claimed and disclosed inventions: Please see the attached Notice of References Cited, particularly **Dias et al.** (U.S. Patent # 6,717,979) and **Miyatani** (U.S. Patent Application Publication #2002/0072343), regarding claims 7-10 and 13.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shelley Chen whose telephone number is (571) 270-1330. The examiner can normally be reached Mondays through Thursdays and on alternate Fridays, between 10:00 AM and 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Tarcza can be reached at (571) 272-6979. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Shelley Chen,



Patent Examiner

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February 28, 2007



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